CICEET,
Cooperative Institute For Coastal & Estuarine Environmental Technology

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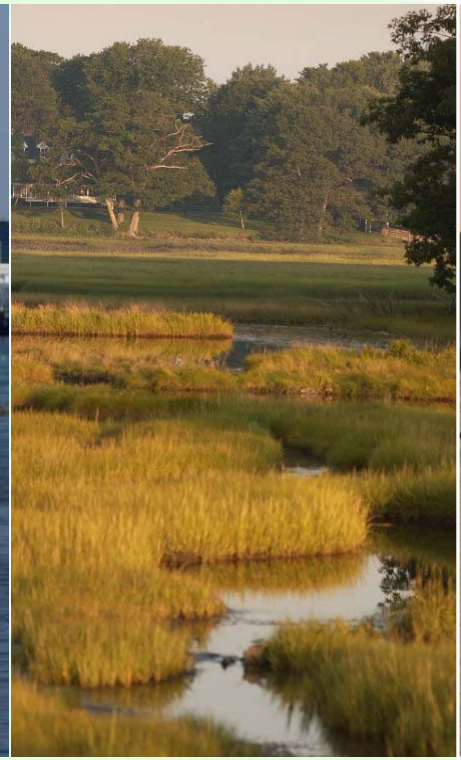
Tools for Clean Water
& Healthy Coasts

CICEET Vision

Clean Water & Healthy Coasts



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Who We Are

A Partnership of….

University of New Hampshire

Richard, Langan, Ph.D
UNH Co-director

NOAA — National Oceanic and Atmospheric Administration — U.S. Department of Commerce

Dwight Trueblood, Ph.D
NOAA Co-director

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Where We Are

Administrative Offices

Gregg Hall, University of New Hampshire at Durham

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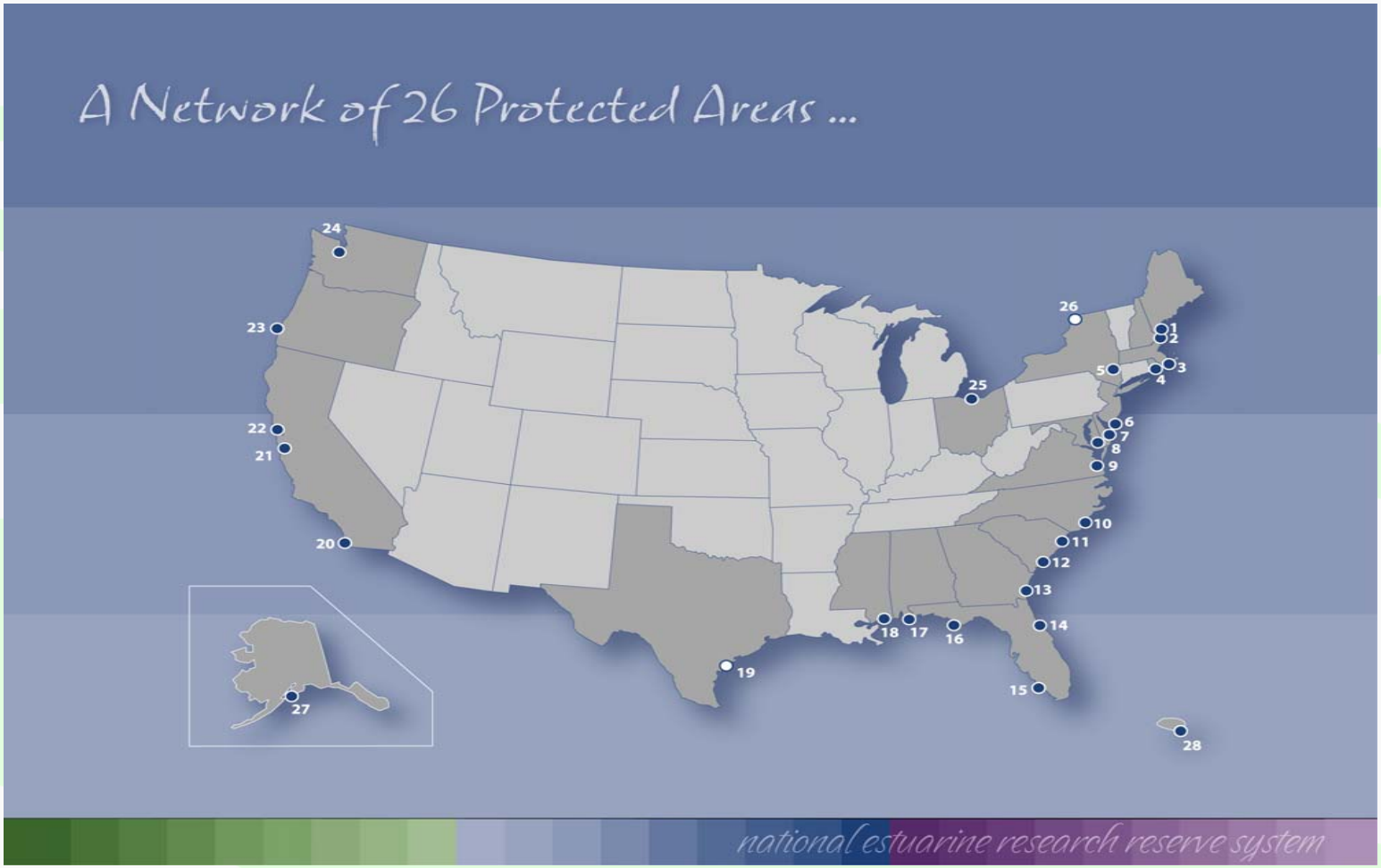
Nationwide through the NERRS



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CICEET's Toolkit

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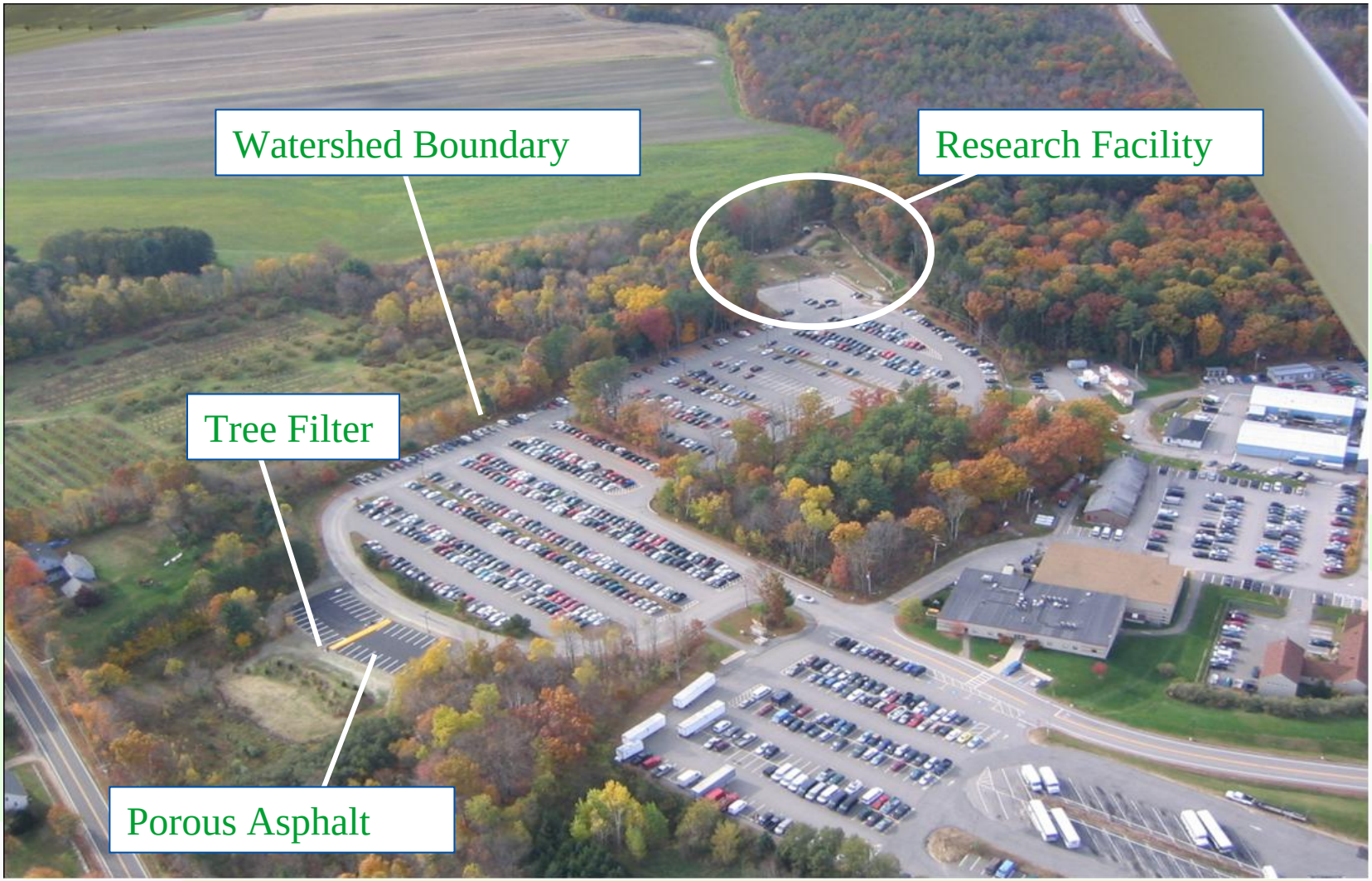
UNH Stormwater Center Field Site



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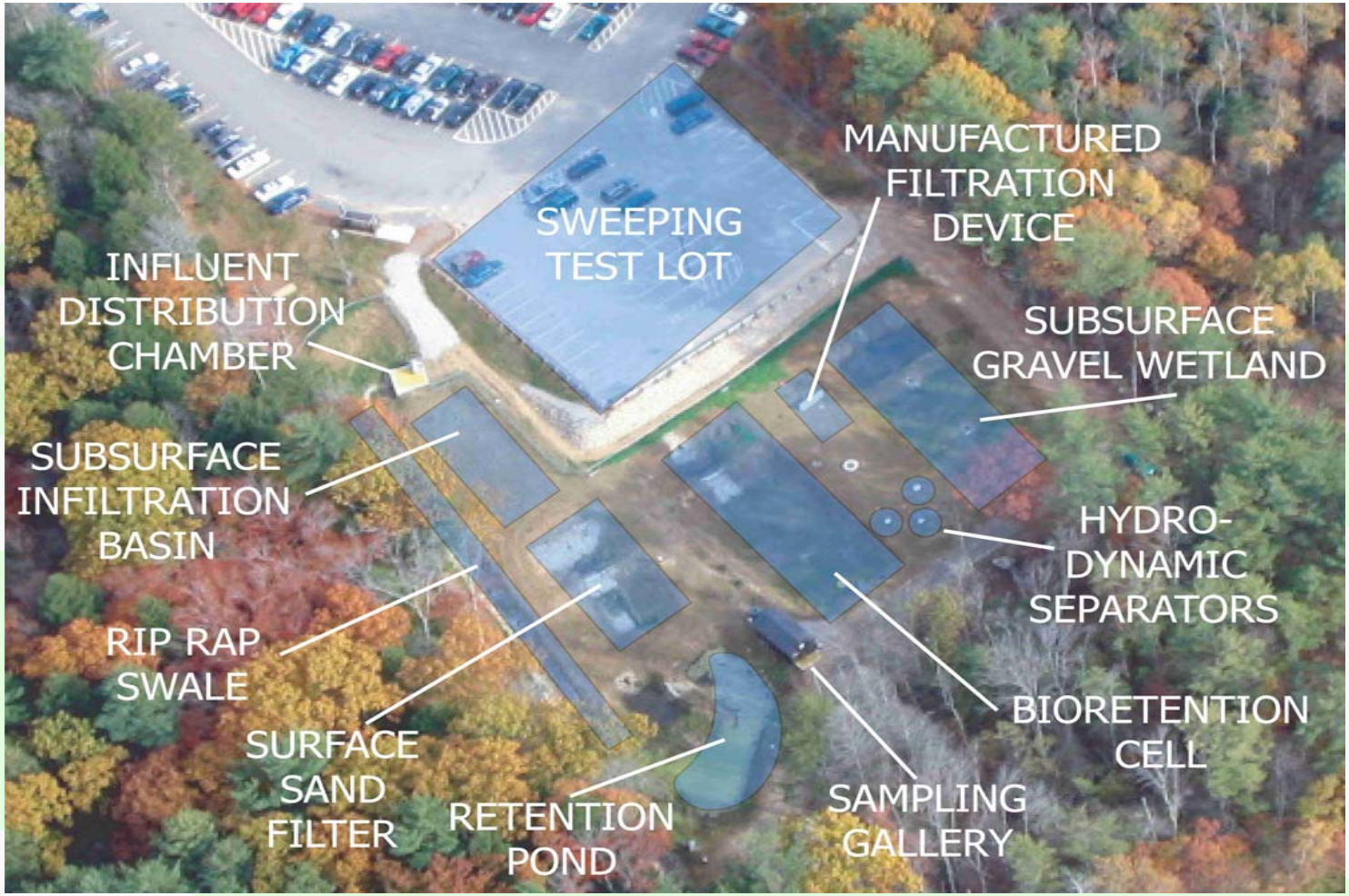
Research & Workshop Facility



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Conventional Structural Designs

Swales

- **Particulate Removal**
- **Nutrients (Vegetated)**
- **Some Infiltration**

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Conventional Structural Designs

Surface Sand Filter

- **Particulate Removal**
- **Nutrients (Vegetated)**
- **High Infiltration**

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Conventional Structural Designs

Ponds

- **Water Retention**
- **Solids Settling**
- **Some Nutrient Removal**
- **Potential Pollution Source**
- **Incubator for Microbes**

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Low Impact Development Designs

Bioretention

- **Physical, Chemical and Biological Treatment**
- **High Infiltration Rates**

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Low Impact Development Designs

Gravel Wetland

- *Unique UNH Design*
- **Physical, Chemical and Biological Treatment**
- **High Infiltration Rates**

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Manufactured Devices

Hydrodynamic Separator

- Floatables, Particulate
- Provides No Infiltration
- Can Be Used In Combination

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System Maintenance

- Time
- Frequency
- Cost
- Manpower

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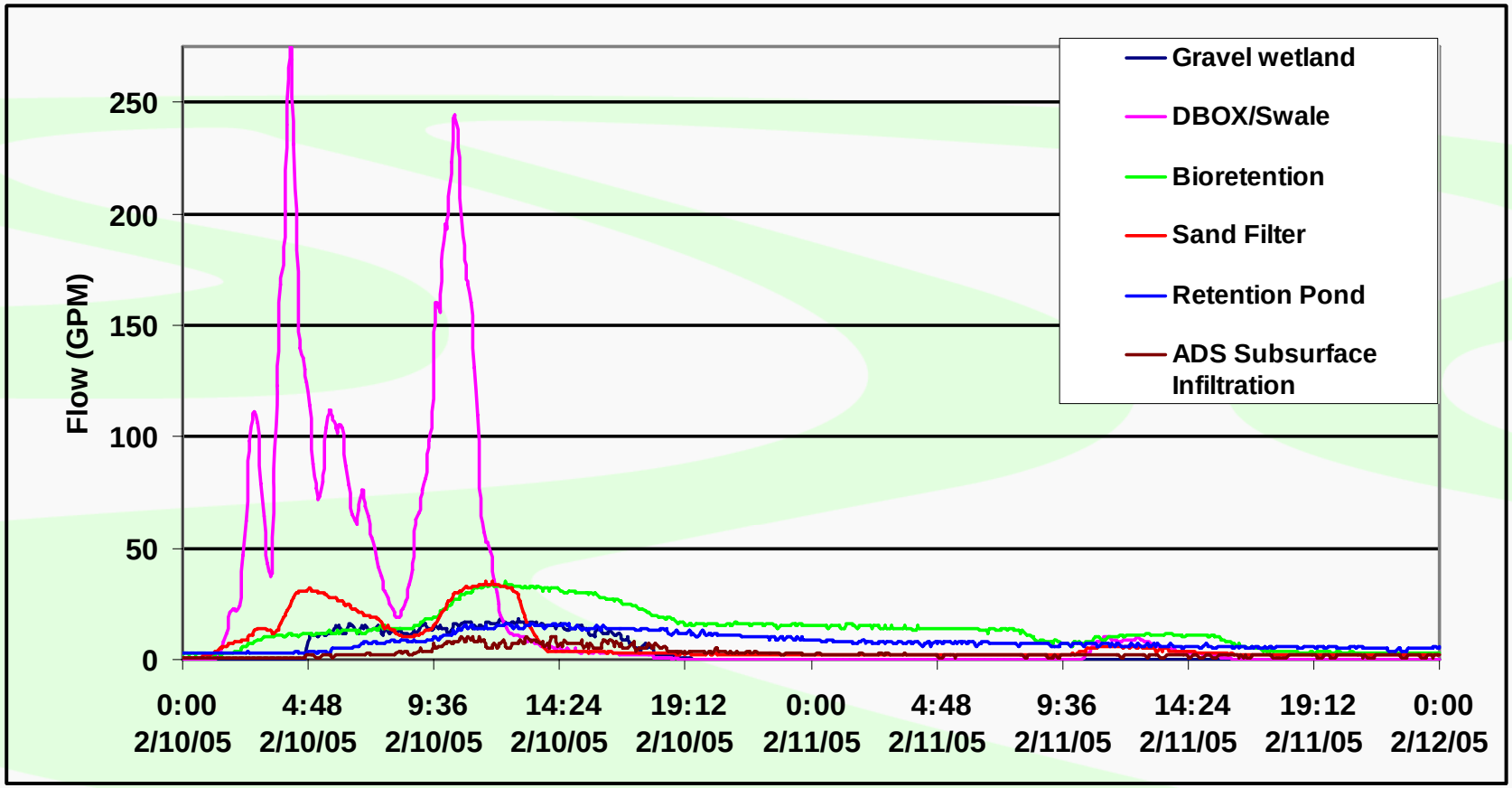
Runoff Hydrograph Reduction



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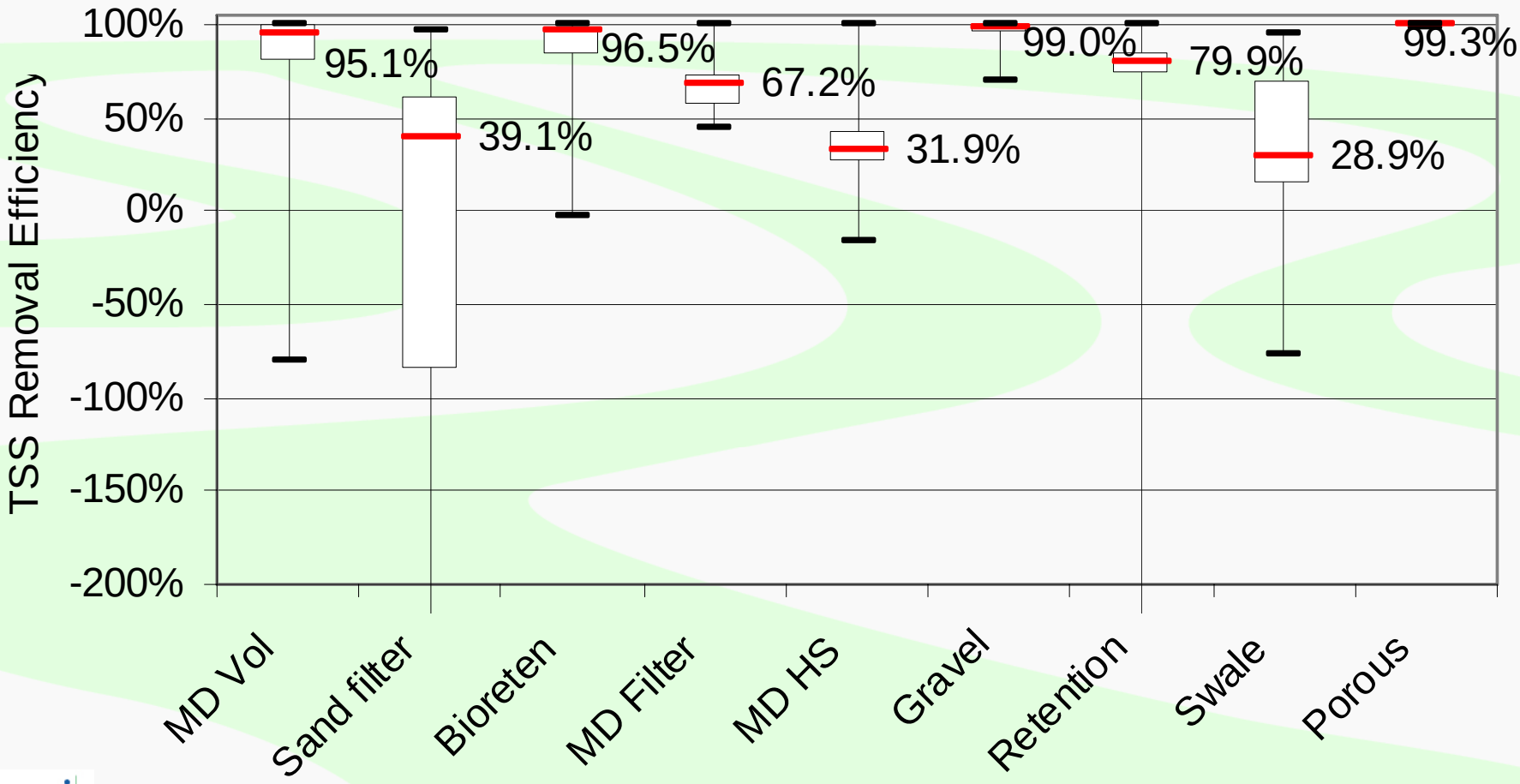
Removal Efficiency Results - TSS



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Conclusions From a Year of Data

- LID Systems Have Highest Removal Efficiency
- First Flush Is Observed for a Wide Range of Storms
- Standard of Practice Is Low, Especially for Swales
- Manufactured Systems Have Wide Performance Range
- LID Systems Need to Be Examined for Maintenance Issues
- Cold Climate (frozen filter media) Appears Unproblematic
- 80% Removal Efficiency Is Difficult to Achieve

Conclusions From a Year of Data, Continued

- Vegetated LID Systems Much Better at Nitrogen Removal
- For DRO: Gravel Wetland, Bioretention, MD Subsurface Infiltration, and Sand Filter Had Highest Performance
- For TSS: Infiltration Systems Have Highest Performance, i.e. Gravel Wetland, Bioretention, MD subsurface infiltration, and Porous Asphalt
- For Zinc: Bioretention, MD subsurface Infiltration, and the Gravel Wetland Exhibited Highest Removal Efficiencies.

Contact the UNH Stomrwater Center

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http://www.unh.edu/erg/cstev/

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Future Directions for CICEET

- Integrated Technology Transfer
- Stakeholder Advisory Group
- Regional Focus Areas
- CICEET Technology Conference

http://ciceet.unh.edu

Questions?